CLAIMS

We claim:

1. A method for traffic gating in a computer network comprising a plurality of distributed subnets, the method comprising:

receiving a first protocol message on a broadcast monitoring network device from a first network device, the first protocol request message comprising an address resolution request for a second network device;

generating a second first protocol message on the broadcast monitoring network device, the second first protocol request message comprising a second address resolution request for the second network device;

sending the second first protocol message from the broadcast monitoring network device;

determining whether a response message to the second first protocol message is received on the broadcast monitoring network device; if not,

determining a network subnet associated with the first network device;

determining a network address of a network element arranged to provide traffic gating to network devices on the network subnet associated with the first network device;

generating a first protocol reply message on the broadcast monitoring network device, the first protocol reply message comprising the network address of the network element arranged to provide traffic gating to the first network device; and

sending the first protocol reply message from the broadcast monitoring network device to the first network device.

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2. A computer readable medium having stored therein instructions for causing a processor to execute the method of claim 1.

3. The method of claim 1, wherein the first network device comprises a source customer premises equipment entity, the second network device comprises a destination customer premises equipment entity, the broadcast monitoring network entity comprises a cable modem, the network element comprises a network router.

4. The method of claim 1, wherein the first network device comprises a source customer premises equipment entity, the second network device comprises a destination customer premises network entity, the broadcast monitoring network entity comprises a digital subscriber line modem, and the network element comprises a network router.

5. The method of claim 1, further comprising, prior to receiving the first protocol request message, initializing the broadcast monitoring network device with a plurality of subnets, each subnet associated with at least one network element arranged to provide traffic gating to network devices on each subnet.

6. The method of claim 5, wherein the broadcast monitoring network device is initialized using a configuration file download.

7. The method of claim 5, wherein the broadcast monitoring network device is initialized using a Simple Network Management Protocol (SNMP).

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8. The method of claim 1, wherein if the first protocol response message is received on the broadcast monitoring network device, updating a local table of network addresses of network device not to proxy for with a network device of the second network device.

9. A method for traffic gating in a computer network comprising a plurality of subnets, the method comprising:

receiving a plurality of subnet initialization records on a broadcast monitoring network entity, each subnet initialization record comprising a subnet identifier and at least one second protocol network address of at least one network element arrange to provide gating services for network devices on a subnet associated with the subnet identifier;

receiving a first address resolution protocol request message on the broadcast monitoring network entity from a first network device, the first address resolution protocol request comprising a request for a second protocol network address of a second network device;

generating a second address resolution request message on the broadcast monitoring network entity, the second address resolution request message comprising a request for the second protocol network address of the second network device;

sending the second address resolution request message from the broadcast monitoring network entity;

determining whether an address resolution protocol reply message to the second address resolution request message from the second network device is received on the broadcast monitoring network entity; if not

determining whether the first network device is in a local routing table on the broadcast monitoring network entity; if so,

determining a network subnet associated with the first network device using a first protocol network address of the first network device;

determining a second protocol network address of a network element associated with the network subnet of the first network device and arranged to provide traffic gating services to network devices on the network subnet; and

sending an address resolution protocol reply message to the first network device, the address resolution protocol reply message comprising the second protocol network address of the network element.

10. A computer readable medium having stored therein instructions for causing a processor to executed the method of claim 9.

11. The method of claim 9, wherein the step of receiving the plurality of subnet initialization records comprises receiving a configuration file during an initialization process, the configuration file comprising the plurality of subnet initialization records encoded in a Type Length Value (TLV) format.

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12. The method of claim 9, wherein the step of receiving the plurality of subnet initialization records comprises receiving the records using a Simple Network Management Protocol (SNMP).

13. The method of claim 9, wherein the first protocol addresses comprise Internet Protocol (IP) addresses, and the second protocol addresses comprise hardware (MAC) addresses.

14. The method of claim 9, wherein the first network device comprises a source customer premises equipment entity, the second network device comprises a destination customer premises equipment entity, the broadcast monitoring network element comprises a cable modem, and the network element comprises a network router.

15. The method of claim 9, wherein the plurality of subnet initialization records comprise a plurality of static records and a plurality of transient records.

16. The method of claim 15, further comprising:

storing the plurality of static records in a static traffic gating table on the broadcast monitoring network device; and

storing the plurality of transient records in a transient traffic gating table on the broadcast monitoring network device.

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17. A broadcast monitoring device on a network subnet comprising:

at least one traffic gating table comprising a plurality of subnet initialization records, each subnet initialization record comprising a subnet identifier and at least one physical network address of a network entity arranged to provide traffic gating to network devices on a subnet associated with the subnet identifier;

a first set of instructions implemented to generate a second address resolution protocol request upon receiving a first address resolution request message on the broadcast monitoring device from a first network device, the first request message and the second request message comprising a request for a physical address of a second network device;

a second set of instructions implemented to determine whether an address resolution response form the second network device is received on the broadcast monitoring device responsive to the second request message sent from the broadcast monitoring device;

a third set of instructions implemented to determine a subnet of the first network device using network address of the first network device and further to determine a physical network address of a network element to provide traffic gating for the first network device using the plurality of subnet initialization records based on the subnet associated with the first network device; and

a fourth set of instructions implemented to generate an address resolution protocol response message comprising the physical network address of the network element arranged to provide traffic gating for the first network device, and to send the address resolution protocol reply message to the first network device.

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18. The broadcast monitoring device of claim 17, wherein the broadcast monitoring device comprises a cable modem.

19. The broadcast monitoring device of claim 17, wherein the broadcast monitoring device comprises a Digital Subscriber Line (DSL) modem.

20. The broadcast monitoring device of claim 17, wherein the plurality of subnet initialization records are received in a configuration file.

21. The broadcast monitoring device of claim 17, wherein the plurality of subnet initialization records are received using a Simple Network Management Protocol (SNMP).

22. The broadcast monitoring device of claim 17, further comprising:

a routing table comprising a plurality of address records of network devices on the network address, each record comprising a physical network address, each record comprising a physical network address and a network address of each device.

23. The broadcast monitoring device of claim 22, wherein the broadcast monitoring device uses the routing table to determine whether a network address of the first network device is in the routing table, and if so, the broadcast monitoring device invoking the third set of instructions for determining the subnet of the first network device.

24. The broadcast monitoring device of claim 17, wherein the first network device comprises a source customer premises equipment entity and the second network device comprises a destination customer premises equipment entity.